

WHAT IS CLAIMED IS:

1. A method of manufacturing an interferometric modulation pixel, comprising:

5 forming a first electrode layer on a transparent substrate, wherein an uppermost layer of the first electrode layer is an insulating layer;

forming a sacrificial layer on the insulating layer;

forming at least two first openings in the sacrificial layer and the first electrode layer to demarcate and define a first electrode, wherein the first 10 electrode is made from the first electrode layer;

coating a photosensitive material on the sacrificial layer and in the first openings;

patterning the photosensitive material to form supports in the first openings;

15 forming a second electrode layer on the sacrificial layer and the supports;

forming at least two second openings in the second electrode layer to define a second electrode, wherein the second electrode is made from the second electrode layer and the orientation of the two second openings is perpendicular to the two first openings;

20 removing the sacrificial layer; and

forming a hydrophobic layer on the insulating layer.

2. The method of claim 1, wherein the insulating layer comprises silicon oxide or silicon nitride.

3. The method of claim 1, wherein the sacrificial layer comprises metal, polysilicon or amorphous silicon.

4. The method of claim 1, wherein a method of forming the first openings 5 and the second openings comprises photolithography and etching.

5. The method of claim 1, wherein the photosensitive material comprises photoresists or photosensitive polymer.

10 6. The method of claim 1, wherein a method of patterning the photosensitive material comprises exposing and developing the photosensitive material.

15 7. The method of claim 1, wherein the sacrificial layer is removed by remote plasma etching.

8. The method of claim 7, wherein a plasma precursor used by the remote plasma etching comprises a fluorine-based or chlorine-based etchant.

20 9. The method of claim 1, wherein the hydrophobic layer is formed by adsorbing a layer of a hydrophobic organic compound having at least a hydrogen atom being capable of forming hydrogen bonds with oxygen or nitrogen atoms.

10. The method of claim 9, wherein the hydrophobic organic compound comprises silanes including hexamethyl disilane or silanols including trimethyl silanol.

5 11. A method of manufacturing an interferometric modulation pixel, comprising:

 forming a first electrode layer on a transparent substrate, wherein a uppermost layer of the first electrode layer is an insulating layer;

 forming a hydrophobic layer on the insulating layer

10 forming a sacrificial layer on the hydrophobic layer;

 forming at least two first openings in the sacrificial layer, the hydrophobic layer and the first electrode layer to define a first electrode, wherein the first electrode is made from the first electrode layer;

15 coating a photosensitive material on the sacrificial layer and in the first openings;

 patterning the photosensitive material to form supports in the first openings;

 forming a second electrode layer on the sacrificial layer and the supports;

20 forming at least two second openings in the second electrode layer to define a second electrode, wherein the second electrode is made from the second electrode layer and the orientation of the two second openings is perpendicular to the two first openings; and

 removing the sacrificial layer.

12. The method of claim 11, wherein the insulating layer comprises silicon oxide or silicon nitride.

13. The method of claim 11, wherein the hydrophobic layer comprises 5 hydrophobic resin.

14. The method of claim 11, wherein the sacrificial layer comprises metal, polysilicon or amorphous silicon.

10 15. The method of claim 11, wherein a method of forming the first openings and the second openings comprises photolithography and etching.

16. The method of claim 11, wherein the photosensitive material comprises photoresists or photosensitive polymer.

15 17. The method of claim 11, wherein a method of patterning the photosensitive material comprises exposing and developing the photosensitive material.

20 18. The method of claim 11, wherein the sacrificial layer is removed by remote plasma etching.

19. The method of claim 18, wherein a plasma precursor used by the remote plasma etching comprises a fluorine-based or chlorine-based etchant.

20. An interferometric modulation pixel, comprising:

- a first electrode;
- a movable second electrode being situated above the first electrode and being parallel to the first electrode;

5 two supports between the first electrode and the second electrode to form a cavity within the first and the second electrodes; and

- a hydrophobic layer on a cavity-side surface of the first electrode to prevent the first electrode from adsorbing water molecules.

10 21. The interferometric modulation pixel of claim 20, wherein the hydrophobic layer comprises a hydrophobic organic compound having at least a hydrogen atom being capable of forming hydrogen bonds with oxygen or nitrogen atoms or a hydrophobic resin.

15 22. The interferometric modulation pixel of claim 20, wherein the hydrophobic organic compound comprises silanes including hexamethyl disilane or silanols including trimethyl silanol.